Section 3 Maintenance

3.1 Disassembly

See the RT-138F Maintenance Manual, Section 2.1.

3.2 Test Equipment

See the RT-138F Maintenance Manual, Section 2.2.

3.3 RT-138F Overall Performance Tests

See the RT-138F Maintenance Manual for wide band tests. All narrow band tests are performed with a C-1000 control head that has been modified for narrow band operation. The following tests apply to a narrow banded RT-138F and are done in the narrow band mode.

3.3.1 Receiver Audio Output

Using a 1000 uv signal with standard modulation, the audio output shall be typically 9.0 vrms across 600 ohms when in the narrow band mode. The test should be performed at one channel for the Main receiver and at one channel for the Guard receiver.

3.3.2 Transmitter Deviation Capability

With an input of .25 Vrms at 1000 Hz, the transmitter shall produce a deviation greater than 1.5 kHz.

3.3.3 Transmitter Deviation Limiter

A 2.5 Vrms audio input signal shall produce no greater than 2.5 kHz deviation.

3.3.4 Transmitter CTCSS

Selection of a tone from either a test set or a control unit shall produce a tone deviation between 350 and 475 Hz (375 Hz nominal). This test needs to be performed at only one channel.

3.4 Troubleshooting

3.4.1 Audio Board Troubleshooting Procedure

The supporting inputs called out in section 2.5.4 in the RT-138F Maintenance Manual, there is an additional input on the narrow banded Audio board called $\overline{\text{Narrow Band}}$ and the narrow banded C-1000 control unit is its source.

$\overline{\text{Narrow Band}}$, when pulled low, will double the gain of A3U1A and A3U15A by applying the signal to the active low inputs 1 and 9 respectively of Analog Switch U1X. U1X and its associated components are on the Daughter Board Assembly 300-040654. With the analog switch enabled, resistors R74 and R5A are effectively paralleled thus doubling the gain of Guard Audio buffer U15A. Also, R1 and R3A are paralleled causing the gain of the Main Audio buffer U1A to double. A high level on these pins would disable U1X and take R5A and R3A electrically out of the circuit. A high on the $\overline{\text{Narrow Band}}$ line should be approximately 10 Volt but anything over 2.4 Volt would be taken as a high by the device and a low is anything less than .8 Volt.

The Modulation Summing buffer U9B is also affected by the $\overline{\text{Narrow Band}}$ control line. Its gain is effectively halved by paralleling resistors R4A and R66 when U1X pin 8 is low. When U1X pin 8 is high, R4A is electrically removed from the circuit and the buffer is at unity gain.

3.5 Alignment Procedures

Refer to the RT-138F Maintenance Manual for the alignment procedures.